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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/887,117	06/25/2001	Jang-Kun Song	06192.0177.NPUS00	7333

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McGuire Woods LLP
1750 Tysons Boulevard
Suite 1800
McLean, VA 22102

EXAMINER

LIU, MING HUN

ART UNIT	PAPER NUMBER
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2697

DATE MAILED: 08/13/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/887,117

Applicant(s)

SONG ET AL.

Examiner

Ming-Hun Liu

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-22 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-22 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) ____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s) ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Claim Objections

1. Claim 13 is objected to because on line 8 of the claim, the word longer is misspelled.
Appropriate correction is required.

Claim 14 is objected to because on line 7 of the claim, the word the is repeated again.
Appropriate correction is required.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claim 1 is rejected under 35 U.S.C. 102(b) as being unpatentable by US Patent 6,064,358 to Kitajima et al.

Kitajima describes in figure 26, a liquid crystal display sequentially applying signal voltages (VD) based on display data to target pixels to display picture images at respective frames, comprising a swing common electrodes for forming storage capacitors; wherein voltages applied to said swing common electrodes (VC) are terminated with minus (-) during the period of gate on when the pixel voltages are inverted from minus (-) to plus (+), while being terminated with plus (+) when the pixel voltages are inverted from plus (+) to minus (-), and repeatedly swung from minus (-) to plus (+) after the gates (VG) turn off.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kitajima and the applicant's admitted prior art.

Referring to claim 2, on page 3, the applicant discloses equation 1 for VP as $VP = \pm VS + (Cst / (Csc + Cgd + Cic)) * \Delta Vg$, where VS indicates voltage applied to a source terminal, Cst indicates capacitance of a storage capacitor, Cgd is parasitic capacitance between a gate terminal and a drain S terminal, C, is capacitance of a liquid crystal capacitor, and ΔVg is a difference between previous gate voltage and present gate voltage. This equation, also given by Kitajima (equation 3), is similar to the one being claimed. There is no disclosed criticality in the specifications as to why the voltage applied should be modified to $VP = \pm VS + (Cst / 2(Csc + Cgd + Cic)) * \Delta Vcom$. The voltage applied is a design variable that can be easily modified by one skilled in the art.

6. Claims 3-10 and 21-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kitajima et al. in view of US patent 6,421,039 to Moon et al.

Referring to claim 3, Kitajima describes in figure 1 and in more detail on in column 4, lines 1 –28, a liquid crystal display using swing common electrodes, comprising a timing signal control unit (204B) outputting a data driver driving signal and a gate driver driving signal, and

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also outputting first signals for defining cycle and amplitude of common voltages depending upon vertical synchronization signals, horizontal synchronization signals, and main clock signals applied from the outside (40). A data driver (204A) outputting data driving voltages for driving polarities of a liquid crystal capacitor based on the data driver driving signal; a gate driver (208) outputting gate driving voltages based on the gate driver driving signal; a driving voltage generation unit making the voltage level of the first signals to go up or down upon receipt of the first signals, and outputting swing common voltages synchronized with the gate driving voltages at a predetermined cycle and a liquid crystal display panel having one or more gate lines carrying scanning signals, one or more data lines crossing over the gate lines to carry picture signals (207), switching elements surrounded by the gate and data lines while being connected to thereto (102), a liquid crystal capacitor (57) transmitting light in proportion to the data driving voltages depending upon the turn on operations of the switching elements and storage capacitors (310) storing the data driving voltage at the turn on of the switching element, and applying the stored data driving voltage to the liquid crystal capacitor at the turn off of the switching element. One skilled in the art understands that these components are necessary if not inherent to the display being claimed. Kitajima describes several of the claimed components however some of the details are omitted in the higher level discussion of Kitajima.

Kitajima however does not allow for the case where the liquid crystal display panel is driven through a line inversion method such that the line at the present frame has a polarity inverted from the polarity of the line at the previous frame. As disclosed by Moon in figure 6A and 6B, line inversion is conventional to the art. It would have been obvious to one skilled in the

art to implement line inversion onto Kitajima's LCD invention, as it is a conventional method of display enhancement.

Claim 4 is rejected on the same grounds as the rejection of claim 1.

Claim 5 is rejected on the same grounds as the rejection of claim 2.

In reference to claim 6, it can be seen from figure 26 of Kitajima that the driving voltage generation unit outputs a first common voltage with the same width as a gate pulse. Naturally since Kitajima's invention does not deal with line inversion, we must refer to Moon. Moon, in column 6, lines 53-58 and figures 15a and 15b, describes that the a first common voltage is outputted when the odd numbered lines is driven under the application of the gate pulse, and outputs a second common voltage with the same width as the gate pulse when an even numbered line is driven under the application of the gate pulse. As mentioned before, it would have been obvious to one skilled in the art to implement line inversion to Kitajima's invention, as it is a conventional method of display enhancement.

In reference to claim 7, Kitajima describes on column 19, lines 51-54, the driving voltage generation unit outputs a first common voltage with a pulse width k times longer than a gate pulse. The added limitation of applying the common voltage sequentially down the gate lines is inherent to the invention.

In reference to claim 8, the claim is rejected on the same grounds as the rejection of claim 3. Dot inversion, as shown by Moon (figure 8a and 8b), is also conventional to the art.

Claim 9 is rejected on the same grounds as the rejection of claim 1.

Claim 10 is rejected on the same grounds as the rejection of claim 2.

In reference to claim 21, there is no disclosed criticality as to why the electrode must be positioned at the claimed locations. These are design specifications controlled by engineers in the art.

Claim 22 is rejected on the grounds outlined in the rejections of claims 1 and 3.

7. Claims 11-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kitajima in view of Moon and further in view of US patent 5,748,165 to Kubota et al.

In reference to claim 11, Kitajima and Moon do not describe the specifics of the circuitry of the common electrodes. Kubota on the other hand, discloses on column 6, lines 8, lines 32-49, a liquid crystal display panel further comprises a first common electrode line and a second common electrode line arranged between the neighboring gate lines in a vertical direction, the first common electrode line connected to odd-numbered pixel electrodes, and the second common electrode line connected to even-numbered pixel electrodes. Kubota's layout called for the first and second common electrodes to be laid out vertically, however one skilled in the art understands that the electrode could have been easily adjusted to lie horizontally.

In reference to claim 12, the limitations in the claim are unpatentable due to the inherency of the limitations. The limitations merely describe the driving nature of using a two common electrode line arrangement while implementing dot inversion. The common voltage waveforms described by the claim is necessary to layout the desired checkerboard pattern. And as established in previous rejections, the common voltage and gate pulse having the same pulse width is an idea that is known in the art.

Claim 13 is rejected on the same grounds as the rejection of claim 7.

In reference to claim 14 and 15, there is no disclosed criticality in the specification that requires the circuit layout of the common electrodes and capacitor to be the claimed manner. One skilled in the art understands that the common electrodes can be adjusted to any reasonable orientation. Similarly, one skilled in the art understands that there are several locations that the storage capacitor can be positioned with in the circuit. The positioning of these components depends on the layout and fabrication criterions of the entire circuit board. One skilled in the art could have positioned the capacitance at the claimed location to avoid parasitic effects from the transistors and ease of fabrication.

Claim 16 is rejected on the same grounds as the rejection for claim 6.

Claims 17-20 are rejected on the grounds discussed in the rejection of claim 7, wherein the variable k includes two to five times the width.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ming-Hun Liu whose telephone number is 703-305-8488. The examiner can normally be reached on Mon-Fri.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Joseph Mancuso can be reached on 703-305-3885. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9314 for regular communications and 703-872-9314 for After Final communications.

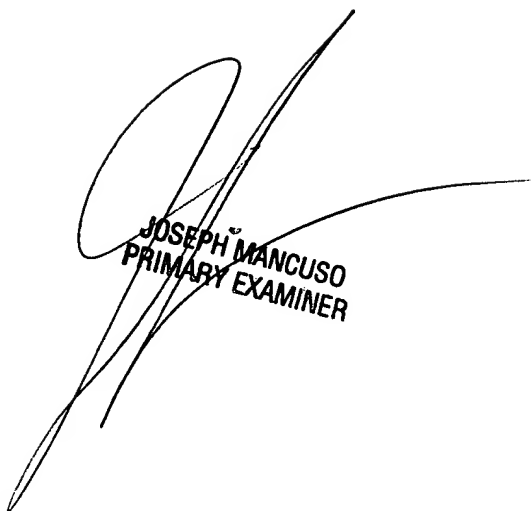
Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-305-4750.

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Ming-Hun Liu
August 11, 2003



JOSEPH MANCUSO
PRIMARY EXAMINER